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Lion's Share to the Pentagon

Despite Tight Budgets, R&D Gets a Sizable Increase

It is pointless at this early stage of an especially unsettled Congress to linger on the details of the R&D budget for fiscal 1986 that the President released last week.

That New Year is still 8 months away, and they are likely to be tumultuous from battles to reduce deficits at the expense of someone else's favorite program. As was demonstrated recently by the Administration's cunning post-season cuts in the "final" 1985 budget for the National Institutes of Health (SGR Vol. XV, No. 2), lightning turnabouts cannot be discounted in current budget politics.

Nonetheless, some meaning can be derived from the scale and direction of the budget and the important fact that on a generally desolate financial landscape for all but the military, R&D fared relatively well. With the military money added in, the President correctly boasted in his State of the Union Address that "Despite budget restraints, we will seek record funding for research and development."

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The budget reflects the Administration's unrestrained zest for military R&D, which, as usual, gets the lion's share of both growth and the grand total of federal R&D spending. Defense R&D is listed for a 22-percent increase, which would bring the Pentagon's and associated national-security R&D to $40 billion in obligations—i.e., authority to commit money, though not necessarily spend it in 1986. With that increase, the military share of all federal R&D would rise to an historic 72 percent. As recently as 1980, the government's civilian and military R&D programs were about even, as they had been since 1965.

The budget is also attentive to university-based basic research in the physical sciences and engineering, a favorite from the early days of the Reagan Administration. The previous go-go growth in spending is absent,

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The Reagan R&D Budget for 1986

(in millions of dollars)

Department or agency	Obligations			Outlays		
	1984 actual	1985 estimate	1986 estimate	1984 actual	1985 estimate	1986 estimate
DoD	26,408	32,318	39,426	23,583	28,539	34,860
HHS	4,836	5,472	5,159	4,449	4,995	5,239
(NIH)	(4,252)	(4,835)	(4,561)	(3,960)	(4,408)	(4,654)
Energy	4,642	4,805	4,712	4,702	4,826	4,714
NASA	2,877	3,506	3,730	3,539	3,260	3,564
NSF	1,203	1,354	1,447	1,108	1,313	1,403
Agriculture	868	940	882	867	901	882
Transportation	446	480	362	342	481	377
Interior	362	378	335	393	371	339
EPA	261	312	327	266	282	317
Commerce	361	384	271	330	368	291
AID	192	217	225	139	225	239
VA	190	227	190	186	224	187
NRC	191	150	138	196	152	141
All other	363	417	396	418	396	407
Total	43,199	50,958	57,598	40,518	46,331	52,958

In Brief

OMB Director David Stockman is said to have personally wielded the scalpel in that last-minute excision of 1500 grants from the NIH budget (SGR Vol. XV, No 2). As recently as last November—which is late in the budget cycle—OMB's Deputy Associate Director for Energy and Science, Hugh F. Loweth, assured a closed meeting of science and academic lobbyists that the budget outlook for R&D was good, "except for big-ticket items." Loweth was right on the latter point.

With disciplines outside the money-gulping field of particle physics expressing fears about the drainage effects of the Superconducting Super Collider, the Department of Energy is countering with predictions that the multi-billion-dollar accelerator will inspire more money for all. Presidential Science Adviser George A. Keyworth II alluded to the small-science anxieties in Congressional testimony last week, and urged non-physicists to back the machine as a "symbol" of American scientific leadership.

Science and technology may rank high in public esteem and economic potential, but not so in the power hierarchy of committees of the House. Under the House system of grading committees as exclusive, major, and non-major, the Science & Technology Committee ranks in the last category, along with the District of Columbia, House Administration and Small Business Committees. In general members may serve on only one exclusive committee, or one major and one non-major, or two non-majors. There are only 3 exclusives—Appropriations, Ways and Means, and Rules.

. . . Basic Science Rises with Boost in Pentagon Funds

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but, in contrast to virtually all other civilian programs, there is some growth in the overall spending plan for basic research.

Measured in obligations, the government-wide total for basic research would rise from $7.78 billion this year to $7.86 in the 1986. The latter figure includes $962 million in Defense Department funds for basic science—a 16-percent increase which reflects some response to Presidential Science Adviser George A. Keyworth's urgings for the money-laden DoD to spend more on university science.

Even so, the 1986 budget's overall growth for basic research is negligible. But a closer look shows that the slimness of the increase comes largely from a proposed $175-million reduction in NIH spending on basic research, plus a $22-million decline in science at the Department of Agriculture. Powerful Congressional patrons have traditionally looked after these agencies, and, unless defense spending takes a whopping cut, it is not likely that cuts can be sustained in such popular and emotionally appealing civilian programs as health and agricultural research.

NSF Slated for 7-Percent Rise

The National Science Foundation—a good barometer of White House feelings toward basic science—is budgeted for a 7-percent rise in obligations, to a record $1.5 billion. The increase, along with a bunch of small cuts and a few wipeouts here and there, will help raise the budget for NSF's ambitious Engineering Research Centers Program (SGR Vol. XIV, No. 18) from the present startup level of $10 million to a respectable $25 million a year.

In response to nationwide complaints about the obsolescence of academic laboratory equipment, NSF's equipment and instrumentation account goes up by $33 million, to a total of $250 million. And there's an additional $20 million, to a total of $272 million, for NSF's Directorate for the Biological, Behavioral, and Social Sciences. The sum includes a $5.4-million increase for the social and economic sciences, both of which are making a slow fiscal comeback following their evisceration in the first Reagan term.

Meanwhile, when 1986 arrives, NSF's Directorate for Science and Engineering Education expects to be sitting on a $31-million bundle left unspent this year. The request for 1986 is $50 million, which, with the leftover money, brings the total to the same level that was appropriated for the current fiscal year. The explanation offered for the coagulated money pipelines in education is that NSF is rebuilding after having dropped the subject four years ago. The science-education lobby in Washington initially accepted that story with good will. But one now hears uncharitable remarks about NSF's leisurely attention to a field that the President and the Congress have deemed of high importance.

Ethics Study Program Dropped

Finally, in a demonstration of what it values, the Administration proposes to eliminate NSF's modest programs of Ethics and Values in Science and Technology ($1 million at present) and Policy Sciences ($1.8 million.)

Many of the previously fast-growing research programs of the Department of Energy have been reined in, with the result that construction would decline by about $150 million, to a total of $1 billion, and R&D obligations would go from $4.8 billion this year to $4.7 billion in 1986. But within that latter sum, DoE's basic-research budget would actually go up a bit—from $912 million to $934 million. While this achievement is somewhat inscrutable and probably not durable, the main ingredients of the ups and downs are as follows:

Some $160 million has been freed by the completion of major construction projects, including the Fermilab's Tevatron I, the Stanford Linear Collider, and accelerator improvements at Yale and the University of Washington. In addition, a hold—possibly fatal—has been placed on the construction go-ahead for the Continuous Electron Beam Facility, a $225-million prize which the battle-scarred Southeastern Universities Research Association landed last year after a notable pork-barrel struggle. With a Newport News, Va., site officially ap-

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. . . Energy Department Puts 1-Year Hold on SURA

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proved, SURA was expecting $15 to $30 million next year to start construction.

But the new budget provides only $5 million, and limits expenditures to R&D and management. DoE will officially say no more than that the project has been delayed one year for budgetary reasons. But there are those who say they detect signs of terminal illness in the project.

There's also $20 million in the DoE budget for R&D on the Superconducting Super Collider, the elastically priced behemoth which the high-energy physics fraternity is panicking the feds into financing as an allegedly indispensable item of national well-being. Variously estimated at $3 billion to $6 billion—depending on whether concrete and magnets are included—the SSC is being gingerly treated by the DoE bureaucracy as far and away the biggest pork-barrel temptation in the history of science. The Department says there's no go-ahead for the machine, only a commitment to pay for studies. But for the veteran tacticians of high-energy politics, that amounts to tolerance for a hand on the knee. DoE has found comfort in assigning the design work to Berkeley, since Berkeley is out of the running for lack of real estate to accommodate the machine.

Further Cuts for Fusion R&D

DoE's fusion program is also in a financial decline in the 1986 budget, dropping by $47 million, to a total of $390 million, which is about $110 million below its peak, in 1983. The distant goal of fusion power suffered a 10-percent cut last year in Congress, which is uneasy about the 25-year, multi-billion-dollar fusion gamble, especially when deficits are high and energy prices are slumping. Sensing an opportunity for an easy cut, the White House this year volunteered another 10-percent reduction.

NASA, which is now junior to the Defense Department as a space agency, is budgeted for $230 million for startup money on the project that it hopes will assure its continued existence—the permanently manned space station. The sum is $50 million less than NASA sought, and it will stretch things out a few months, but, with strong White House backing, the manned-station looks safe. Overall, NASA is budgeted for a 6-percent increase in R&D, including 4 percent more for basic research.

If the Administration has its way, the Department of Agriculture's R&D budget would decline from $940 million this year to $882 in 1986. The long-lagging Competitive Grants Program, which made a financial breakthrough in the last Congress to a record $46 million, would remain at that figure, but the budget of the Agricultural Research Service would decline slightly from the present $485 million.

1986 Plan for Basic Research

(in millions of dollars)

Department or agency	Obligations 1984 actual	Obligations 1985 estimate	Obligations 1986 estimate	Outlays 1984 actual	Outlays 1985 estimate	Outlays 1986 estimate
Agencies supporting primarily physical sciences and engineering:						
NSF	1,132	1,273	1,366	1,042	1,235	1,325
DoD	847	829	962	720	768	852
Energy	827	912	934	820	904	937
NASA	713	801	834	729	825	818
Interior	120	130	119	133	128	120
Commerce	21	22	18	21	21	18
Other Agencies	9	9	10	8	9	10
Subtotal	3,668	3,976	4,241	3,473	3,891	4,078
Agencies supporting primarily life and other sciences:						
HHS	2,812	3,225	3,049	2,587	2,938	3,078
(NIH)	(2,625)	(3,022)	(2,847)	(2,441)	(2,753)	(2,896)
Agriculture	393	440	418	394	410	407
Smithsonian	61	65	64	56	63	66
EPA	30	37	40	26	24	28
VA	16	15	16	16	16	16
Education	10	12	12	28	9	11
Other Agencies	16	17	22	14	17	19
Subtotal	3,337	3,810	3,621	3,120	3,476	3,633
Total	7,005	7,786	7,862	6,593	7,367	7,712

In the budget for the Department of Commerce, the Administration is back again with plans to wipe out the politically popular Sea Grant Program of the National Oceanic and Atmospheric Administration and also to eliminate the fire- and building-research programs at the National Bureau of Standards. Congress has annually thwarted these designs, and is likely to do so again.

When fiscal 1986 begins, will the signed appropriations bills for R&D bear a strong resemblance to the newly submitted budget? Unless an across-the-board budget-holding discipline is instituted on Capitol Hill, the odds are that, as happened last year, the proposal for Defense R&D will be trimmed a couple of billion dollars, but the Pentagon's R&D budget will nonetheless grow prodigiously; the Congress will essentially rubber-stamp the Administration's relatively generous budget for NSF; Agriculture will be spared from cuts in R&D, but might not get any growth, and DoE and NASA may get a bit more than was proposed by the White House, but not much.

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Keyworth Defends His Kind Words for a Pork-Barreler

With R&D relatively well-treated in a budget that otherwise crimps almost everything but the Pentagon, Presidential Science Adviser George A. Keyworth II was favorably received February 5 in his annual appearance before the House Science and Technology Committee. But a few beanballs were thrown at him.

The most well-aimed originated in the increasingly volatile issue of pork-barreling for academic R&D facilities, a subject that ranks close to deficit-reduction as an inspiration for doubletalk on Capitol Hill. However, Keyworth's assailant, Rep. James F. Sensenbrenner (R-Wisc.), possesses meticulously clean hands on the facilities issue. Not only has he sponsored an ignored resolution affirming scientific peer review as the exclusive mechanism for distributing the goodies (SGR Vol. XIV, No. 7), but he also voted against his own region's quest for the $225-million Continuous Electron Beam Facility after peer reviewers favored a Newport News, Va., site.

Keyworth himself has often declared that deviations from peer review are a menace to science. If that's the position of the President's Science Adviser, demanded Sensenbrenner, why had Keyworth whitewashed the pork-barrel coup of Committee Chairman Don Fuqua (D-Fla.), who last year slyly extracted $7-million from the Department of Energy for a computer facility at Florida State University (SGR Vol. XIV, No. 16)?

The Adviser committed the offense of absolution, charged Sensenbrenner, in an interview published in *C&E News* of November 26, 1984, wherein he is reported as saying:

> I think Don Fuqua has been erroneously maligned. There has been blatant pork. And that came through universities that went to lobbying orgnizations in Washington and tried to literally play the process. That is sheer unadulterated pork. Don talked to me from the very beginning about that supercomputer opportunity in Florida. He was interested in it. It was spontaneous in Florida, and from the very beginning his argument to me was, "Jay [Keyworth], I want nothing but quality in my state and I'd appreciate your technical judgment as to the quality of that project." He was using me for my honest opinion whether this was a first-class facility.
>
> First of all, I said I would give him my opinion. Second, I gave him my opinion. I said they have a very good and very promising computer science capability. What they have in mind is very much what we are trying to do in stimulating supercomputers, and I will continue to give my objective views on it. I did all the way along. There was no pork. It bore no resemblance to what was being done via the lobbying process. There was very careful comparison to other opportunities in other agencies.

As a poker-faced Chairman Fuqua studied his cigar, Sensenbrenner noted that DOE, which was incensed by Fuqua's intervention, privately denounced the Chairman's ploy as "a pork-barrel project," and "kept on urging me to pick a fight" with Fuqua.

"What you're telling us in this magazine," Sensenbrenner said, "is that if a university hires a lobbying firm, that's pork, but if their Representative sees you first, it isn't."

Taking the high road after Sensenbrenner's rendition of the shady events, Keyworth asserted, "I must say that I support peer review . . . more today than I did than when I was on the other of the fence as a working scientist. I think it works, it's effective, and it's entirely the best we can do in our system of government, and I think that is superb . . . . I also want to say," Keyworth continued, "that your efforts in supporting this have been absolutely essential."

As Fuqua continued scrutinizing his cigar, Keyworth went on, noting Congressman Sensenbrenner's avowed devotion to integrity. "The reason I answered *C&E News* in the way that I did," Keyworth explained, "was that I wanted to preserve my integrity, because it happens to be true. There's only one word in that quote that I question. I don't believe that I ever said that I was used. We were beginning an initiative to try to support a stronger science base in this country in supercomputers . . . . It was new, it was different, and whenever we are starting new areas of science . . . we have got to make it exactly clear what our basic objective is, and then the scientific community responds. In other words, at the outset, it takes some encouragement."

"In this particular case," Keyworth continued as the

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Budget

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As the leading spokesman for the Adminstration's R&D policies, Science Adviser Keyworth dutifully defends the budget, but not exuberantly. Testifying before the House Science and Techonology Committee on February 5, Keyworth said science had gained sufficient strength since 1981 to weather a dip in growth. But he added:

"I won't hide my concern about the vitality of US science over the long term and about its continued attraction for the best young minds . . . . As I said, we're in good shape for 1986. Our real challenges will come in fiscal years 1987 and 1988, when we simply will have to find ways to ensure our ability to pursue—and vigorously pursue—new avenues of research."

Committee members asked for assurances of ampler budgets in those latter years, though no one had to tell them that the US government conducts most of its business on a year-to-year basis. Keyworth merely said he was hopeful.

Looking for that silver lining, he even offered the notion that "after such rapid growth [in R&D], sharing in the overall federal austerity may well stimulate sharper delineation of priorities in science." Maybe. But over the years he's been warning that ups and downs in support—"spikes," as he calls them—are more to be feared than anemic budgets.—DSG

Biotechnology's Nemesis: Q & A with Jeremy Rifkin (I)

Initially dismissed as merely a quixotic Luddite, Jeremy Rifkin has since established himself as perhaps the leading counterforce to the so-called biotechnology revolution. Head of a Washington-based shoestring operation, the Foundation on Economic Trends, Rifkin, 40, has created legalistic turmoil for biotechnology through shrewdly aimed court suits. Rifkin is also heavily engaged on the lecture and talk-show circuits, has written or co-authored 8 books, and has 2 more on the way. SGR Editor Greenberg spoke with Rifkin January 30. Following is the text, transcribed and edited by SGR.

•

SGR. Where do things stand in your various litigations against biotechnology?

RIFKIN. First, there's the challenging of the NIH on the whole question of releasing genetically engineered products in the environment. We've won a preliminary injunction on that. The second is the case against the US Department of Agriculture, on the issue of transferring genes between species, in this case, human growth hormone genes into livestock. It has been accepted by the court, but hasn't come to trial yet.

The third case is against the Department of Defense, which was brought in December, on the construction of the aerosol test lab and chemical laboratory at Dugway Proving Grounds, in Utah—biological warfare research. That is still moving through the courts. We were scheduled for a preliminary injunction hearing on February 7. Two weeks before that, the DoD conceded to do an environmental assessment to see if they need an environmental impact statement. But the construction of that facility is on hold.

SGR. What do you see as the significance of these cases?

RIVKIN. I don't know what the resolution of the DoD and Agriculture cases will be. The NIH case was important because there was virtually no discussion about the environmental risk in any meaningful way inside the RAC [Recombinant DNA Advisory Committee, at NIH], or inside policy circles, or in the media or in the public, until we brought that case. It's interesting that when that case was brought, there was a tremendous amount of attack against me and about the case. But now, a year later, I think most people think it wasn't a bad thing to do, to bring attention to this, so the government could begin looking at appropriate regulatory procedures on the whole question of environmental impact.

SGR. There's a lot of curiosity about how you finance your activities.

RIFKIN. We took in and spent about $140,000 last year. Lectures at universities make up a great deal of it; I do one- and two-day residencies. Book contracts and royalties make up a lot of it. We get some small environmental foundation grants—from the liberal left foundations.

SGR. Does that include legal costs?

RIFKIN. I have a lawyer, Edward Lee Rogers, who's like family, in the sense that we've paid a lot of legal bills, but we still owe a lot. But he is a 20-year man in environmental law; he was counsel for the Environmental Defense Fund and he was at the Defense Department under Carter.

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Keyworth

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press table tittered and wise smirks were seen to be exchanged among other members of the audience, "I talked to dozens of university presidents around the country. They came to see me, and I said we'd be very encouraging of your trying to use your best talent to come up with new proposals. In the case of Florida State University, actually I didn't hear about the proposal from the Chairman. I heard about it first through the scientific channels of communication that we maintain . . . . There was no aura . . . of pork" in the project, Keyworth insisted. "Excellence was the criteron."

What about the DOE egging Sensenbrenner to "pick a fight" with Chairman Fuqua? Keyworth offered the following analysis:

As a veteran of 17 years' service in a DOE lab (Los Alamos), he said, "I have been astonished at one thing—that it [DOE] is far more dominated by the mentality of the legal profession . . . by interpretations of why we cannot do things under the law than it is on how we can accommodate both the spirit and the letter of the law and move forward."

DOE, Keyworth continued, "has found many, many impediments to resist change in science . . . as well as in the way we use our national laboratories better."

Having meandered through the infirmities of the DOE, Keyworth returned to Florida State and its Congressionally assisted $7 million. "This was an exception," he said, "it was not pork, to the best of my knowledge, and that's why I said so."

Replied Sensenbrenner: "I don't think you answered my question, Dr. Keyworth." And the Congressman then lamented the "failure of communications" between Keyworth's office and the DOE, and the difficulties that thus ensued for a Republican Congressman striving to be loyal to his side.

Keyworth promised better communications. Fuqua took a long puff on his well-contemplated cigar, and the proceeding turned to far less nettlesome subjects.

. . . Sees Little Government Interest in Biotech Safety

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SGR. Who else works with you besides your lawyer?

RIFKIN. There is myself and two others, and a researcher.

SGR. Your recent books have dealt with the implications of science and technology. What's your background in that?

RIFKIN. Science and technology are a new subject for me. I have a master's in economics from Tufts. The early books were all on economic philosophy—self-management and workplace philosophy questions. I didn't really get into science and technology until *Entropy* (Viking Press, 1980) and *Algeny* (Viking Press, 1983). *Entropy* was basically from my activist background in environment and from my economics background. It's basically a book on redefining economic philosophy. *Algeny* is the first one that goes clearly into the philosophy of technology.

That's what it's really about; it's not really on science as much it is on the philosophy of technology and the philosophy of nature. I don't attempt to address the sciences from a scientific perspective. I attempt to address them from social philosophy. I'm looking at the philosophical underpinnings of the assumptions we use and the social philosophy implications of science and technology. I'm more interested in technology. My mentors were Jacques Ellul, Lewis Mumford, that whole school, Herbert Marcuse.

Looking for Basic Issues

SGR. Your activism has been far more effective than your targets originally thought it would be just a few years ago. What strategic approach have you used?

RIFKIN. On the political stuff, I've tried to take a look at what I thought were issues that were fundamental to the long-term question of a bio-technical civilization. So, instead of trying to deal with simple regulatory questions, or interesting short-term policy questions, what I've tried to do is each step of the way look at those issues that were fundamental and actually inherent to the logic of the computer-bio-technical revolution. The first major thing that we did was fight GE's attempt in the Supreme Court in 1980 to obtain a patent on a living micro-organism. We provided the main *amicus* for the government's side. We lost by a very close decision, but we did a fair job in terms of our legal case. We saw the issue as fundamental because it involved the whole question of the control and ownership of living things.

The next thing that I thought was fairly central was the question of germline engineering. That's what led to the 1983 religious coalition [in which representatives of virtually every major church organization in the US signed a Rifkin-inspired "Theological Letter Concerning the Moral Arguments Against the Genetic Engineering of the Human Germline Cells"]. I wanted to establish a dialog for considering germline therapy, which I think is not more than 15 years off; there will probably be some crude form of it by 1990.

SGR. Do you regard the recent paper from the White House as a good faith attempt to regulate biotechnology—[a reference to "Proposal for a Coordinated Framework for Regulation of Biotechnology," Federal Register, December 31, with 90 days allowed for public comments, prior to publication of the final regulations]?

RIFKIN. I think the key thing here is liability. Industry wants to go ahead and have their liability underwritten by the federal government. So, what's happening here is they're putting together the minimum requirements necessary to allow the public to assume that these considerations are being taken care of. And to allow industry to be able to feel secure that they if anything goes wrong, the liability is on the government, because they've set up the rules and regulations that have to be followed.

Denies Fears Are Exaggerated

EPA says it tends to treat this industry with a very light hand. The White House Science Adviser and his Deputy have said all along that their interest is not having the Japanese or the Germans or others get ahead of us. Their interest has primarily reflected commercial needs, and only very, very minimally environmental safeguards.

SGR. A lot of people feel that the fears that underlie your reservations are greatly exaggerated, that there is no evidence to suggest that there's any hazard in this stuff.

RIFKIN. If you're saying, do I think we're going to have killer tomatoes, no. Only a few magazines have unfairly stated my position. Let's just look at deliberate release, though there are a lot of other problems. On deliberate release you have to look at it on the principle of low-probability, high-consequence risk. That is, whenever you introduce a new genetic product, the chances are that it will be benign. However, a small percentage of introductions will prove to be very, very difficult and could be catastrophic, and I've used exotics as my analogy, just as other environmental scientists have when they've testified before Congressional committees.

A small percentage of exotics go wild, like Dutch Elm, and when they do, the damage they do is irreversible and absolutely catastrophic. The cost of damage from exotics way exceeds petrochemicals.

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. . . Predicts Industry Will Seek Liability Limitation

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SGR. Are you suggesting that Dutch Elm disease is genetic in origin?

RIFKIN. No. It's an organism that is not native to this habitat that was brought over here and causes damage to our plant life. This organism was not meant for this ecosystem and it went rampant and found a niche in there that made it very, very congenial to take over. Like starlings or rabbits.

SGR. We know there are natural genetic alterations going on all the time. Do you feel satisfied that natural changes have occurred that have had catastrophic consequences?

RIFKIN. Of course, there have been. Now, many scientists will say,"Well, that's nature, and are we going to do anything more disruptive than what nature does?" But when biotechnology gears up in the next decade or two, they will be introducing thousands of new genetically engineered products a year, just as we introduce thousands of petrochemcial products. Most petrochemicals products are not dangerous. But a small percentage of them are. It is commonsensical to assume that most genetic-engineering products will not be dangerous, but a small percentage of them will. And they could pose bigger problems than petrochemicals for three reasons: They're alive, so they're inherently unpredictable; they're mobile, and you can't recall them."

Damage Comes Slowly

The small percentage that will cause damage could exceed in magnitude the damage from the petrochemical age. But you won't see the damage in a fortnight. You have to look at the long-term cumulative impact over decades of introducing mutated or slightly changed or greatly changed organisms into ecosystems. And I think there's a good case to be made that that kind of disruption will cause some problems. On the other side, for industry to say that there will be no problems, and that it will all be beneficial, is either naive or disingenuous.

Industry is saying that Jeremy Rifkin is an alarmist, that there are no problems here. But the next major thing that they're going to want for the biotechnology industry is a Price-Anderson Act [of 1957, which basically limits private liability from nuclear accidents to $500 million above a firm's insurance coverage]. My speculation is that that request is going to come in the next 5 years. They're going to be asking for some kind of legislation to allow for the government and the taxpayer to assume ultimate liability, because the insurance industry will not be willing, beyond a certain pool, to assume liability for some of the products they're going to put in the environment. That's my speculation. I can't prove it. It will take 5 years, when enough products are moving toward the marketplace, when there will be some need in the insurance industry to start dealing with this issue.

SGR. Do you take the position that you want to reap the benefits of the biotechnology revolution while guarding against potential hazards?

RIFKIN. No. I haven't said that. I have real concerns about the biotechnology revolution. What I've said is that I think there are tremendous benefits to it. But, in my mind, there's a real big question as to whether the short-term benefits are exceeded by the long-term damage. I have real reservations about the entire technological revolution, even though I understand and appreciate all the benefits of it.

SGR. Do you want to turn it off?

RIFKIN. I think before we go ahead, I'd like to see a lot more of the important questions raised and dealt with. I think we're moving much quicker than the ability of society and public policy to deal with the issues.

SGR. What are the important questions?

RIFKIN. Eugenics. My position on this technology is that it is inherently eugenic. A lot of people, when they think about genetic engineering, worry about Hitler and the master race and some strange cabal of scientists and policy leaders using this for evil ends. I'm not worried about that. I think it's a possibility, but it's a remote possibility. I believe a new eugenics has already been accepted; it came in the back door when the ethicists were looking at the front door.

(The interview will be concluded in the next issue.)

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Applicants in Stew as NIH Gets Cutback Order

The NIH grapevine routinely hums with useful exchanges of information between money-dispensing officials in Bethesda and anxious applicants in laboratories throughout the country. But in recent weeks, the informal communications system has spawned wondrous confusion as NIH faces an Office of Management and Budget directive to slice 1500 grants from it spending plans for the current fiscal year (SGR Vol. XV, No. 2). The cut would leave NIH with money for 5000 new and continuing grants.

Without a reprieve from Congress, which the biomedical lobby is trying to muster, the reduction is unavoidable, which means that evaluation scores that would formerly have led to a grant will now end up in the approved-but-unfunded category. In addition, the cuts bring up an extraordinarily sensitive question for the managers of NIH: Will existing commitments be reneged on?

The official and legally correct answer is no, according to NIH. Any researcher who has received a formal "Notice of Grant Award" can count on receiving the stated amount, they explain.

But the difficulty with that view of the matter is that because of the languid flow of paperwork at NIH, it long ago became customary for NIH staff members to notify grantees when favorable decisions were en route to emerging from the system but still had a way to go. These pre-official notices provided valuable time for politicking for laboratory space, shopping for equipment, recruiting staff, and such things.

When written, these unofficial notifications would usually hedge a bit with language along the lines of "we expect to make an award." But the practice differs from institute to institute at the loose confederation known as NIH. Then, too, the telephone adds opportunities for imprecision that can leave an immense gap between what a grant-managing official cautiously intends and what a grant-seeking scientist excitedly hears.

As a result of this process, NIH officials say, there are applicants out there who are due to be disappointed. How many? Given the informality of the grapevine, there's no way of knowing. According to one estimate, "probably 100 have been 'overadvised.' " With nearly half the fiscal year gone in which the once-expected 1500 grants were to be awarded, that figure may sound low. But NIH explains that "the bulk" of the awards are generally made in the latter part of the year and at this point, relatively few applications have advanced to the stage where unofficial word would go out. In any case, firm assurance is given that money officially promised will, in fact, be delivered.

But the NIH financing system tends to build expectations that are difficult for non-lawyers to distinguish from legal commitments. When NIH awards a standard 3-year grant, it commits itself to provide money one year at a time, with the next batch contingent upon Congress appropriating more—and, as it now turns out, upon OMB permitting NIH to spend it. NIH says it feels a moral commitment to finance its multi-year grants to the end, but, as it turns out, that's a sentiment, rather than a guarantee.

Meanwhile, a counterattack is beginning. One of the first shots was fired January 28, a week before the budget came out, in a letter to the President from four Democratic members of the House Appropriations Committee—Joseph D. Early (Mass.), Louis Stokes (Ohio), Edward R. Roybal (Calif.), and Steny Hoyer (Md.). They wrote that the decision to provide NIH with funds for 6500 grants had bipartisan House-Senate support in the last Congress, and should not be changed "without prior consultation with and review by the Appropriations Committees."

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